

**Meeting of the Decommissioning Project Community Workgroup (#27)**  
**Tuesday, April 25, 2006**  
**EHOVE Career Center, Milan**

The meeting began at 7 p.m. Present were Workgroup members John Blakeman, Ralph Roshong, Danette Johnson, Rick Myosky and Mike Yost. NASA representatives included: Keith Peecook, Acting Decommissioning Project Manager; Bill Stoner, Project Radiation Safety Officer (RSO); Rod Case, Assistant Project RSO; Frank Greco, Glenn Decommissioning Program Manager; Peter Kolb, Project Environmental Manager and Sally Harrington, Glenn Public Affairs Specialist. Also present were Tom Dragoun, and Patrick Isaac from the U.S. Nuclear Regulatory Commission (NRC); Jim Colelli of the Ohio Department of Health (ODH); and Susan Santos and Michael Morgan of FOCUS GROUP. In addition, there were seven members of the public in attendance.

**Opening Remarks**

Keith Peecook provided welcoming remarks, noting that Workgroup member John Blakeman had been part of the panel since 1999 and fellow member Ralph Roshong a member for nearly that long. Susan asked the group for, and received, acceptance of the minutes from the January meeting, then briefly reviewed the April meeting agenda. She also noted that members Danette Johnson, Rick Myosky and Mike Yost were attending their first Workgroup meeting. Susan then introduced Rod Case, who provided a presentation on understanding radiation exposure, dose assessment and the results of the recently completed Plum Brook off-site sediment sampling. NASA also distributed to all attendees copies of a new, one-page, fact sheet summarizing the sampling results.

**Understanding Radiation, Exposure, Dose and the Results of Plum Brook Sampling**

Rod Case began his presentation with a primer on radiation and radioactivity, intended for those members of the audience who were not familiar with the topic. He started by explaining a number of terms, including the following:

Radioactivity: The energy given off by radioactive material as it decays to a more stable condition.

Contamination: Radioactive material where it should not be

Curie: A unit measure of radioactivity, in the number of disintegrations (or energy) given off per second. A curie has 3.7 billion disintegrations per second. A picocurie equals one-trillionth of a curie, which he noted is an “extremely small” amount of radiation.

Rem: A measure of dose received. A millirem is one, one-thousandth of a Rem.

Background: The normally occurring level of radioactivity in a given area.

Cesium 137 and Cobalt 60: These are man-made, radioactive isotopes that give off energy in the form of gamma rays.

Rod talked about the average annual exposure of 360 millirem per year (about a third of a rem), for residents of northern Ohio. He identified a number of sources and the average annual level attached to each, including: exposure to a variety of naturally occurring radiation sources, such as radon (200 millirem, 55% of the 360 millirem average); cosmic, terrestrial and internal exposure – including natural radiation in food, such as potassium in bananas – (100 millirem, 27%); medical (53 millirem, 15%); consumer products (0.5 to 13 millirem, 2%) and other (less than 3 millirem, 2%).

Rod, who had previously worked on the decommissioning of the former Saxton test reactor facility in Pennsylvania, then discussed how radioactivity is detected and measured. He explained that NASA used sensitive instruments to measure radiation levels in Plum Brook sediment, including a canister-like device which he termed a sodium iodide detector, attached to a “data logger.” Rod said this type of detector was “a good field instrument, because it’s not extremely fragile,” and was successfully used throughout the fall and winter in cold, muddy and damp areas adjacent to Plum Brook.

Rod then discussed the concepts of radiation exposure and dose, especially as it pertains to Plum Brook. He noted that, “Once the amount of radioactive contamination present is identified, it’s necessary to figure out the possible dose to the public.” He said “The mere presence of radioactivity does not equal dose,” pointing out that it was necessary to examine all the ways that someone could be exposed, including direct (exposure), ingestion and inhalation. To determine the possible dose an individual could receive from the contamination in certain parts of Plum Brook, he said NASA utilized computer modeling, “to convert radiation to dose,” using a variety of assumptions about how someone might be exposed.

The radiation found in Plum Brook is in discrete locations, but in order to estimate the possible maximum dose someone could receive from the levels of radioactivity found in Plum Brook, NASA assumed that a child would go to an area of Plum Brook, 25 feet long, by 16 feet wide, and 1.5 feet deep. Next, Rod said, “We asked: How much time is a person going to be there?” NASA estimated that a child might spend four hours every week, for eight months of the year, playing outside in that same area (or a total duration of 140 hours). Although the average radiation reading for 1,223 samples was just 2.7 picocuries per gram, NASA used the assumption that the entire area a child would play in was at the highest reading found: one isolated sample of 50 picocuries per gram. Based on all these assumptions, NASA determined that the dose a child might receive from all possible exposure routes from Plum Brook sediment would be 2 millirem per year. Rod pointed out that this additional amount was less than 1% of the total 360 millirem dose a person is exposed to each year.

#### Plum Brook Off-site Sampling Results

Rod followed his explanation of exposure and measurement with a presentation on the results of off-site sediment sampling adjacent to Plum Brook, to let the public know

“what we did and where we did it.” He noted that the length of Plum Brook extends from the NASA Plum Brook Station fence line and north through Taylor and Bogart Roads, U.S. 250 and Sandusky Bay. NASA’s comprehensive sampling program, he noted focused on the area extending from the NASA fence line to U.S. 250 and began in November 2005. For tracking purposes, NASA broke up Plum Brook into four sections (A-D). Section A extended from the NASA Plum Brook Station (PBS) fence line to Clark Road; Section B from Clark to the former NASA sewage treatment plant; Section C from the treatment plant to Bogart Road; and Section D extended from Bogart to US 250. Of the 1,223 samples collected, the average reading was below 3 picocuries per gram.

There were a few areas with elevated readings of one specific isotope – Cesium 137 – above 12 picocuries per gram, which Rod said was the proposed cleanup level for Cesium on the Decommissioning Project. [Note: The cleanup proposed Cesium cleanup level for both the Decommissioning Project and Plum Brook was subsequently changed to 14.7 picocuries per gram.] Two types of samples were taken: 747 random and 367 targeted, along with another group of 109 samples “split” for analysis at outside labs contracted by NASA, to perform independent quality control. Split samples were also taken for analysis by NRC and ODH labs. The samples were taken at three depths: from the surface to 6 inches below; 6-15 inches below; and 15-24 inches below, but he noted that in some places “it was too rocky” to take samples fully 24 inches below the surface.

According to Rod, random samples were based on a predetermined geographic distribution, with NASA laying out a grid of the entire area to be sampled and then collected samples every 50 feet along the center line of the stream; and with alternating samples to the right or left of the center line samples. Targeted samples were taken in areas where we had found elevated readings, and “designed to identify the highest levels of contamination present.” NASA used very sensitive instruments to identify the presence of any radioactivity above “300 counts per minute,” which he explained was equivalent to 6 picocuries per gram. Rod said utilizing a program of both random and targeted samples, “gave us a really good picture of what kind of contamination might be present.” The results of all samples – those analyzed by NASA and those “split” with other agencies – were consistent and Rod pointed out that “There is no health risk to the public, including children,” in any of the levels found, adding that over 60 percent of all the samples were below background levels.

Rod said the highest level for any sample was 50 picocuries per gram “in one little spot” in Section A, between the NASA fence line and Clark Road, an area about 1,800 feet long. The highest levels found in Sections B, C and D were 27, 26 and 27 picocuries respectively. He noted that only 20 of the 1,223 total samples exceeded 14.7 picocuries. Workgroup member John Blakeman asked if there were “any particular site characteristics, like mud” regarding the elevated samples. Rod responded that some were the results of “the flow of the brook,” while others had to do with the “type of soil,” in which the levels were found. He also noted that sampling was done “not in pristine areas,” pointing out that workers from subcontractor MOTA Corp. took samples “on their hands and knees...in dirt and mud,” because NASA wanted to make sure “we understood all the issues,” associated with the sampling effort.

Keith noted that NASA had sent a sampling results report to some 30 property owners living adjacent to Plum Brook, which included the results of sampling conducted on their individual properties. The results were also sent to the NRC, ODH and other agencies as well. He added that “our take” on possible cleanup is that “we can do spot remediation in some areas and no action in others,” explaining that in some areas where samples with elevated readings were taken, the simple act of digging up the sample served to eliminate the contamination. Keith also said NASA would recommend to regulators a cleanup level of 14.7 picocuries per gram for Cesium in Plum Brook sediment, consistent with the Decommissioning Project’s on-site cleanup level, which he described as extremely health protective. Such a level, he said, is consistent with “the resident farmer scenario,” in which – at the end of decommissioning – the land formerly home to the Reactor Facility would be clean enough for a farm family to live on, safely drinking the area’s groundwater and growing crops on the land.

Keith also said sampling had begun in a fifth area, between U.S. 250 and Ohio Route 2, noting that NASA was now working with a local hydrogeologist, Bob Hagen, to help identify if there are any other specific areas where contamination may have moved downstream. He added that NASA would employ a Geoprobe, a truck-mounted, two-pronged drilling device, that would allow for sampling to reach down as deep as 24 inches in areas where there are trace amounts of Cesium. He added that he expected sampling results in Area E to be consistent with the areas previously sampled, observing that he expected to see “a few spots above” 14.7 picocuries, but mostly ones and twos.”

## **NRC Update**

Keith noted that at the January 17 public meeting with Congresswoman Marcy Kaptur, he and the NRC stated that the agencies were working closely together. He reiterated this statement, then introduced Patrick Isaac, the NRC program manager supervising the Decommissioning Project. Pat said the NRC had conducted a Reactor Facility site inspection the week of January 16, focusing on NASA activity regarding the Plum Brook off-site levels, and that another site inspection was now underway. He added that the January review covered NASA’s off-site survey plan and the results of December survey activity in Area A (Plum Brook Station to Clark Road) and that the NRC had arranged for an independent contractor – the Oak Ridge Institute for Science and Engineering (ORISE) – to perform an in-process and independent evaluation of NASA’s survey program.

Pat said the NRC issued a report on March 23 that detailed the results of the agency’s January site inspection, saying NASA’s “response (to off-site issues) was appropriate” adding that the NRC found that “there are presently no safety hazards to members of the public or site personnel” regarding the off-site issues. He noted that the results are available on line, in the Adams Reading Room on the NRC Website at [www.nrc.gov/reading-rm/adams.html](http://www.nrc.gov/reading-rm/adams.html). Susan Santos added that NASA would see about creating a link from the Decommissioning Website to the NRC/Adams Reading Room.

## **Project Update**

Keith gave a presentation on current site work taking place on the Decommissioning Project since the January meeting. He said work has focused mainly on three areas, including: the cleaning and surveying of embedded piping, fixed equipment removal, and the decontamination and subsequent surveying in the Hot Cells and site-wide characterization of radiation throughout the Reactor Facility.

### Embedded Piping

Keith said there had been substantial progress made on the decontamination and surveying of embedded piping – pipes encased in concrete and as much as 25 feet below ground in Reactor Facility buildings. He said NASA had determined that more than 11,000 feet of piping - 2.2 miles - had to be cleaned and that to date, 5,160 feet (“almost one mile”) had been successfully cleaned and surveyed. He said most of the residual contamination is in the form of rust inside the pipes and that NASA had been successful in cleaning nearly all of it by mechanical means, using a “chain flail that rotated through the piping and “knocking the dust off” for vacuuming. The piping is then surveyed to ensure that it meets cleanup levels. He said that about 250 feet to date would need additional cleaning, using the hydrolaze, a high-power (20,000 pounds per square inch) pressure washer.

Keith said that regardless of the cleaning methods employed, all cleaned piping is again surveyed, then filled with grout to immobilize it. He reported that, to date, workers had completed cleaning and surveying embedded piping in three buildings – the Reactor, Reactor Office and Laboratory and Service Equipment Buildings – with work now progressing in the Fan House and Waste Handling Buildings. John Blakeman asked how NASA ensures that it has found all the piping that needs to be cleaned and Keith responded that “we chase other lengths of pipe, floor drains, etc.” and also study building plans that are “well documented.” He said the rust removed is being temporarily stored in 55 gallon drums and will eventually be shipped to a licensed disposal facility as low-level radioactive waste. Keith observed that workers are currently cleaning and surveying about 250 feet of pipe each week and anticipated completion by the end of October.

### Hot Cells

The Hot Cells are seven rooms once used to analyze the results of experiments conducted when the reactor was operational. Keith reported that the largest and most contaminated cell, Hot Cell, #1, had largely been successfully decontaminated, and that work was progressing – but about a month behind schedule. He said the delay was mostly attributable to the removal of a stainless steel liner from the cell, explaining that some loose contamination on the steel was vaporized by the use of cutting torches, which caused it to become airborne within the cell. He noted that workers have removed all fixed equipment, including four 20-ton concrete slabs that comprised its roof. He said the roof slabs will be cleaned and then recycled as scrap concrete. Workers have also removed from Cell #1 two leaded glass, protective windows, each four feet thick and weighing more than 500 pounds. Keith noted that NASA has developed a technique for

removing the window glass from the frames, which will speed up the task in the other cells. NASA is removing the leaded glass from the windows, and temporarily storing it in 55 gallon containers. Ultimately, NASA will ship the glass to a licensed disposal facility as mixed waste, a combination of low-level radioactive waste and lead.

Keith also said NASA is evaluating the approach to contamination in the other Hot Cells, and is analyzing the cost for decontamination versus demolishing the rooms and packaging the various material as low-level radioactive waste (LLRW), for disposal at a licensed facility, an approach he said is known as “rip and ship....taking the building apart and leaving a hole in the ground.” He said the latter approach would increase disposal costs, but result in lower decontamination costs, and also shorten the project work schedule. He added that NASA Headquarters would be conducting an independent cost analysis before making the decision on which way to proceed.

#### Characterization Activity

Keith reported that NASA was continuing its progress on ongoing characterization throughout the Reactor Facility, especially in the walls of the former quadrants and canals in the Reactor Building. He said the walls had been covered with a fiberglass matting, coated with an epoxy paint, which served to protect the concrete in the walls. But the bonding material (“mastic”) used to fasten the fiberglass to the walls contained asbestos, which had to be removed before NASA could conduct what he termed “core borings” into the walls to determine how much contamination there was in the concrete. Keith said there are about 350 asbestos “hot spots,” and that removal of the asbestos has taken place in 177 of these areas, and he anticipates that at least 200 would be abated by June. But he added that there was good news in that “We are finding very little contamination in the concrete under the asbestos.”

Keith also said NASA will continue with characterization efforts, at some Plum Brook Station locations inside the NASA fence line but off-site of the Reactor Facility. They included a “burn area...where office trash had once been stored and burned,” a 2-3 acre site about 2 miles south of the Reactor Facility, and an area in which there had once been (non reactor) chemical spills. He said the Decommissioning Team would use the Geoprobe to take additional samples deep under the ground in these areas.

#### Future Activity

Keith discussed what he termed “the path to completion” of decommissioning, saying again that NASA Headquarters will conduct a cost analysis before a decision is made on how to proceed (decontamination vs. “rip and ship”) on Hot Cell contamination. He reiterated that NASA expects to complete embedded piping cleaning and surveying by the end of October and surveying work regarding the off-site Plum Brook levels to be completed by the end of summer. He added that work would continue on removing all the Hot Cell windows and that there would be some decontamination work on loose contamination in the Hot Lab Building. In addition, he said NASA would install “dewatering wells” in the sump areas of some Reactor Facility buildings. Finally, Keith reported that he expects NASA, by late 2007, to develop a Request for Proposals, which will entail completing the remaining major decommissioning work.

## **Community Outreach Update**

Sally Harrington reported that messages on the 24-hour, toll-free Project Information Line (1-800-260-383) are being updated every two to three weeks. She also said the next project newsletter would be published in June and be mailed to more than 2,300 recipients on the project mailing list. She also reported on some non-decommissioning activities at Plum Brook Station (PBS), noting that representatives from NASA headquarters, other centers and several industries had taken a tour of the PBS test facilities and that they remained available for use by government and business entities. Finally, she thanked retiring EHOVE Superintendent Joe DeRose for his hospitality and long-standing support for NASA, and expressed well wishes for his retirement. Susan Santos added that the Frequently Asked Questions (FAQ) on the Project Website had been updated, per suggestions made by Workgroup members at the January meeting and that further updates would be made on the FAQ's, Glossary and other pages in May.

## **Future Meetings and Topics**

Susan Santos noted that the summer Workgroup meeting date had been changed from July 25 to Tuesday, August 8, at the Huron Public Library. Meeting topics will include an update on Plum Brook off-site sampling and Project and Community Outreach Updates. She added that FOCUS GROUP would send to all members absent from the April 25 meeting, a copy of the Off-site Sampling Results and the one-page fact sheet summarizing them.

John Blakeman observed that "The findings of the NRC confirming safety," on the Decommissioning Project and NASA's off-site sampling program, were "big news. NASA is not hiding anything." Susan asked Workgroup members to send along any questions or additional topics that they would like discussed at the August Workgroup meeting, and also asked them to keep NASA informed of any decommissioning or off-site sampling questions they may receive from neighbors, constituents or other members of the larger community.

The meeting adjourned at 8:20 p.m.